

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

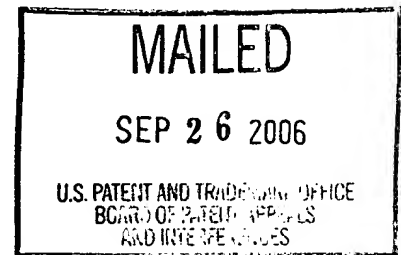
UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte ULRICH BROCKEL, BRUNO KESLER,
GUNTER GAUS, and JOACHIM MEYER

Appeal No. 2006-2448
Application No. 09/487,000

ON BRIEF



Before GRIMES, GREEN, and LEOVITZ, Administrative Patent Judges.

GRIMES, Administrative Patent Judge.

DECISION ON APPEAL

This appeal involves claims to impregnated salts. The examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 134. We affirm.

Background

The specification describes a salt of a carboxylic acid that has been impregnated with from 0.5 to 30% by weight carboxylic acid based on the carboxylic acid salt.

Page 1, lines 4-7. The specification states that the carboxylic acid is a liquid, specifically it is liquid or becomes liquid at the processing temperature, which is preferably 40°C or below. Page 3, lines 21-24.

According to the specification, “[t]he term impregnation means applying at least one carboxylic acid, which is liquid at 40°C or below, to the solid carboxylic acid salt(s) so that the liquid carboxylic acid(s) penetrate(s) into the salt crystal(s). . . For the impregnation, at least one carboxylic acid is applied in an amount of up to 30% by weight, based on the carboxylic acid salt(s), onto the salt(s) . . . to produce a solid substance as reaction product.” Page 4, lines 11-22.

The specification states that “[t]he size of the impregnated salt crystals is preferably below 2.5 mm, particularly preferably from 10 μm to 2000 μm .” Page 5, lines 15-17. In addition, “[t]he impregnated salts advantageously consist of the salts of a carboxylic acid which have been impregnated with the same carboxylic acid.” Page 3, lines 39-42. Furthermore, “[a]cids such as formic, acetic and/or propionic acid and their ammonium, calcium, lithium, sodium, magnesium and/or potassium salts are preferably used.” Page 3, lines 30-32.

Discussion

1. Claim construction

Claims 1, 2, 4-19, and 21-25 are pending and on appeal. We will focus on claim 1, which is the only independent claim. We will also address claims 4 and 22, which were separately argued. Because none of claims 2, 5-19, and 21 were separately argued, they will stand or fall with claim 1. Claims 23-25 depend from and will therefore stand or fall with claim 22. Appeal Brief, page 5. Claims 1, 4, and 22 read as follows:

1. Impregnated salts with a particle size of 10 μm to 2000 μm comprising at least one salt of one or more carboxylic acids, which salt has been impregnated with from 0.5 to 30% by weight, based on the carboxylic acid salt, of at least one carboxylic acid that is liquid or becomes liquid at a temperature of 40°C or below.

4. Impregnated salts as claimed in claim 1, where the carboxylic acids in the carboxylic acid salts and the carboxylic acid used for impregnating the salts are identical.

22. Impregnated salts as claimed in claim 1, comprising at least one salt of a carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid, which salt has been impregnated with at least one carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid.

Thus, claim 1 is directed to a carboxylic acid salt that is impregnated with 0.5 to 30% by weight carboxylic acid based on the carboxylic acid salt. Claim 1 also recites that the carboxylic acid is a liquid or becomes a liquid at a temperature of 40°C or below and that the impregnated salts have a particle size of 10 μm to 2000 μm .

Claim 4 depends from claim 1 and recites that the carboxylic acid in the carboxylic acid salt is the same as the carboxylic acid used to impregnate the salt.

Claim 22 depends from claim 1 and recites that the carboxylic acid in the carboxylic acid salt and the carboxylic acid used to impregnate the salt are, independently, formic acid, acetic acid or propionic acid.

2. Van Ooijen and Kotani

The examiner rejected claims 1, 2, 4-19, 21, and 23-25 under 35 U.S.C. § 103 as obvious over van Ooijen¹ in view of Kotani.² The examiner argued that “[v]an Ooijen discloses a composition containing an alkaline earth metal hydroxycarboxylate and a

¹ Van Ooijen, European Patent Application No. EP 0 608 975 A1, published August 3, 1994.

² Kotani et al., U.S. Patent No. 4,122,187, issued October 24, 1978.

carboxylic acid, which can be potassium, magnesium and calcium . . . (page 2, lines 20-56 and page 3, lines 1-15),” and that the carboxylic acid can be a liquid that impregnates the salt. Examiner’s Answer, pages 3 and 4. In addition, the examiner argued that “[v]an Ooijen discloses 1-90%, preferably 40-60% hydrocarboxylic acid (page 3, lines 16-21). No patentable distinction is seen at this time in the range of 0.5 to 30% absent a showing of unexpected results.” Examiner’s Answer, pages 3-4.

Furthermore, the examiner argued that “[v]an Ooijen discloses that the mixture can be in ‘the form of a powder or granules’ (page 3, lines 20-23)” and that Kotani describes particle sizes of “100 to 200 mesh, which is within the claimed size.” Examiner’s Answer, pages 10 and 4. The examiner reasoned that “it would have been obvious to use amounts within the claimed amounts as shown by van Ooijen . . . and to use the particle size of Kotani et al. in the composition of [van] Ooijen.” Examiner’s Answer, page 4.

Appellants argue that there would have been no motivation to modify van Ooijen in view of Kotani to arrive at the impregnated salts of claim 1. In particular, Appellants argue that the problem being address by the present invention, specifically reducing odor, does not provide one of ordinary skill in the art with motivation to combine van Ooijen with Kotani. Appeal Brief, pages 7-8. In addition, “the Examiner did not point to any particular knowledge in the pertinent art which would have motivated a person of ordinary skill in the art to modify the teachings of *van Ooijen* in light of the disclosure of *Kotani et al.* in the manner which is necessary to arrive at appellants’ impregnated salts, nor is such knowledge apparent to appellants.” Appeal Brief, page 8. Furthermore, the

combination is “clearly not guided by any information conveyed by the references or by the knowledge which was available at the time appellants made their invention.” Id.

Appellants also argue that the preferred aliphatic carboxylic acids of van Ooijen are solids and that “a person of ordinary skill in the art could not reasonably expect to produce any advantage or beneficial result by employing an aliphatic carboxylic acid which is liquid at a temperature of 40°C or below.” Appeal Brief, page 7. In addition, Appellants argue that there would have been “no reasonable expectation to arrive at an advantage or a beneficial result by employing any aliphatic carboxylic acid in less than equimolar amounts.” Id.

We conclude that claim 1 would have been obvious over the combination of van Ooijen with Kotani. Van Ooijen relates to storing hydroxycarboxylic acids, especially lactic acid, in the form of their alkali(ne earth) metal salts. Page 2, lines 1-19. Specifically, van Ooijen describes “a composition comprising an alkali(ne earth) metal carboxylate of a hydroxycarboxylic acid which is a liquid or a semi-solid at ambient temperature, and an aliphatic carboxylic acid which has a lower pKa than that of the hydroxycarboxylic acid.” Page 2, lines 20-22.

As pointed out by the examiner, van Ooijen states that “if the aliphatic carboxylic acid is a liquid, this liquid can be used to impregnate the solid calcium carboxylate of the hydroxycarboxylic acid.” Page 3, lines 12-14. In addition, van Ooijen states that “[t]he hydroxycarboxylate salt may, for instance, be admixed or impregnated with 1 to 90% w/w, preferably 40-60% w/w of the aliphatic carboxylic acid based on the total weight of the alkali(ne earth) metal salt of the hydroxycarboxylic acid.” Page 3, lines 18-20.

Thus, even though van Ooijen describes embodiments in which the aliphatic carboxylic acid is a solid and states that an equimolar mixture is most preferred, we conclude that the examiner has set forth a prima facie case that it would have been obvious, based on the teachings of van Ooijen, to use a liquid aliphatic carboxylic acid to impregnate the salt in amounts of from 1 to 90% w/w, including in the claimed amounts, based on the total weight of the salt. “[W]here there is a range disclosed in the prior art, and the claimed invention falls within that range, there is a presumption of obviousness.” Iron Grip Barbell Co., Inc. v. USA Sports, Inc., 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004).

In addition, van Ooijen discloses that the mixture can be in “the form of a powder or granules,” but does not specify the size of the particles. Page 3, lines 22-23. Kotani describes sorbic acid-potassium sorbate double salts having an average particle size of 100 to 200 mesh. Col. 4, lines 50-53. In addition, Kotani teaches that powders of sorbic acid double salts “having a particle size of less than 150 μ , particularly of less than 100 μ are easy to scatter in handling” and that commercially available powders generally have “an average particle size of more than 150 μ , particularly 200 to 300 μ .” Col. 1, lines 14-30. Thus, Kotani describes powders having particle sizes that are easily within the claimed range of 10 μm to 2000 μm .³

As with van Ooijen, Kotani describes a powder containing a carboxylic acid and a carboxylic acid salt. Although the powder of Kotani is different from the powder of van Ooijen, given the similarities between these two powders and the broad particle size

³ We take official notice that the micron (μ) units used by Kotani are equivalent to the micrometer (μm) units used in the claims: 1 μ = 1 μm .

range being claimed, which easily encompasses the particle sizes described in Kotani, we conclude that Kotani provides evidence that a powder having a particle size within the range of from 10 μm to 2000 μm would have been obvious based on the teachings of van Ooijen. Given the fact that Kotani is being used as evidence of what would have been obvious based on the teachings of van Ooijen, and is not being used to modify specific teachings of van Ooijen, we are not persuaded by Appellants' arguments that there would have been no motivation to combine van Ooijen with Kotani.

For these reasons, we conclude that the examiner has set forth a prima facie case that claim 1 would have been obvious over the combination of van Ooijen with Kotani. Appellants have not rebutted the examiner's prima facie case of obviousness. We therefore affirm the rejection of claim 1 under 35 U.S.C. §103 over van Ooijen in view of Kotani. Claims 2, 5-19, and 21 fall with claim 1.

With regard to claim 4, the examiner argued that “[van] Ooijen discloses using an alkaline earth metal carboxylate of a hydroxycarboxylic acid and another acid, which does not exclude using the same salt, which would breakdown to the same acid.” Examiner's Answer, page 5.

Appellants argue that, for the principles of van Ooijen to apply, the aliphatic acid that is combined with the hydroxycarboxylic acid salt must have a pKa value below the pKa of the hydroxycarboxylic acid of the salt. As a result, modifying van Ooijen to arrive at the subject matter of claim 4 would “not only change the principle of operation of the compositions addressed in the teaching of *van Ooijen* but also render the compositions taught by *van Ooijen* unsatisfactory for their intended purpose.” Thus, Appellants argue that one of ordinary skill in the art would not have been motivated to modify the

teachings of van Ooijen to include the same carboxylic acid as both the aliphatic carboxylic acid and as the hydroxycarboxylic acid of the salt. Appeal Brief, page 9. We agree.

As discussed above, van Ooijen describes “a composition comprising an alkali(ne earth) metal carboxylate of a hydroxycarboxylic acid . . . and an aliphatic carboxylic acid which has a lower pKa than that of the hydroxycarboxylic acid.” Page 2, lines 20-22. “[D]ue to the relative differences in the pKa values (ie dissociation constants), the aliphatic carboxylate ion combines preferentially with the alkali(ne earth) metal ions to form the alkali(ne earth) metal salt of the aliphatic carboxylic acid and releases the free hydroxycarboxylic acid *in situ*.” Page 2, lines 30-32. If the aliphatic carboxylic acid was the same acid as the hydroxycarboxylic acid, the aliphatic carboxylic acid would not have a lower pKa than the hydroxycarboxylic acid and, therefore, the composition would not achieve the intended purpose of van Ooijen. As a result, we conclude that there would have been no motivation to modify the teachings of van Ooijen to use the same carboxylic acid for both the aliphatic carboxylic acid and the hydroxycarboxylic acid of the salt. See In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). We therefore reverse the rejection of claim 4 under 35 U.S.C. §103 over van Ooijen in view of Kotani.

Claims 23-25 depend from claim 22. Appellants argue that claims 23-25 should not be rejected over van Ooijen in view of Kotani for the same reasons that claim 22 is not rejected over van Ooijen in view of Kotani. Appeal Brief, page 5. We agree. A dependent claim incorporates all of the limitations of the claim(s) on which it depends. 35 U.S.C. § 112, fourth paragraph. Thus, if a claim (e.g., claim 22) is not made obvious

by a particular combination of references, then the claims dependent on that claim cannot be obvious in view of the same references. Because the examiner has not shown that claim 22 would have been obvious in view of van Ooijen and Kotani, claims 23-25 have not been shown to be obvious in view of those references either. We therefore reverse the rejection of claims 23-25 under 35 U.S.C. §103 over van Ooijen in view of Kotani.

3. Gonthier and Kotani

The examiner rejected claims 1, 2, 4-19, 21, and 23-25 under 35 U.S.C. § 103 as obvious over Gonthier⁴ in view of Kotani. The examiner also rejected claim 22 as obvious in view of van Ooijen, Kotani, and Gonthier. For the reasons discussed below, we do not find van Ooijen necessary to meet the limitations of claim 22.

The examiner argued that Gonthier “disclose[s] a preservative-type impregnated salt containing like acids and salts which can use a salt of magnesium (col. 1, lines 41-69) in amounts of from 0.1[1] to 100/1 (col. 1, lines 64-73).” Examiner’s Answer, page 3. At column 1, lines 41-69, Gonthier describes “a mixture of propionic acid and benzoic acid buffered with their corresponding salts.” Referring to column 2, lines 8-24, of Gonthier, which describes using the mixture in terms of grams per liter of water or ice, the examiner noted that “grams are generally a measurement of solids.” Examiner’s Answer, page 11. In addition, the examiner argued that the mixture added to the water in Example 1 of Gonthier is a solid. Specifically, the examiner argued that “[t]he composition is not a liquid until the 2 grams have been mixed with the liter of water.” Examiner’s Answer, page 12.

⁴ Gonthier et al., U.S. Patent No. 3,600,198, issued August 17, 1971.

Furthermore, the examiner argued that Kotani describes particle sizes of “100 to 200 mesh, which is within the claimed size.” Examiner’s Answer, page 4. The examiner reasoned that “it would have been obvious to use amounts within the claimed amounts as shown by . . . Gonthier and to use the particle size of Kotani et al. in the composition of . . . Gonthier.” Id.

Appellants argue that a system in the solid state prevents the equilibrium characteristic of a buffer system and that therefore “the buffered mixtures which are addressed in the teaching on *Gonthier et al.* are necessarily, at least to a certain extent, in liquid form.” Appeal Brief, page 10. In addition, Appellants argue that there would have been no motivation to modify the teachings of Gonthier in light of Kotani. Specifically, Appellants argue that there would not have been any motivation “to turn away from the buffered systems taught by *Gonthier et al.* which are, at least to a certain extent, in liquid form, and to focus instead on solid salts having a certain particle size. . . . To the contrary, a person of ordinary skill in the art considering the disclosure of *Kotani et al.* that particulate products, ie. acids or salts of the acids, are the cause of, rather than the solution to, a problem would have had to consider it a bonus and not a drawback that the buffered mixtures of *Gonthier et al.* are, at least to a certain extent, in liquid form.” Appeal Brief, pages 10-11. Furthermore, Appellants argue that “in light of appellants’ requirement that the impregnated salt be a solid having a certain particle size, a modification of the teaching of *Gonthier et al.* as is necessary to arrive at appellants’ impregnated salts would clearly change the principle of operation of the mixture taught by *Gonthier et al.*” Appeal Brief, page 11.

We disagree with Appellants' interpretation of Gonthier. Gonthier describes "a mixture of propionic acid and benzoic acid buffered with their corresponding salts of alkali metals or of magnesium." Col. 1, lines 48-51. Gonthier states that the new compositions "are mixtures of a buffered mixture of propionic acid/metal propionate and of a buffered mixture of benzoic acid/metal benzoate," such as propionic acid-sodium propionate and benzoic acid-sodium benzoate. Col. 1, lines 52-59. In addition, Gonthier states that "the molar ratio of salt/corresponding acid may vary from 0.1/1 to 100/1." Col. 1, lines 67-68. Gonthier also states that "the volume ratios of propionic acid and propionate to benzoic acid and benzoate [are] preferably between 0.5/1 and 99/1." Col. 1, lines 70-72. Thus, Gonthier describes a broad range of the amounts of each of the components of the composition.

In order to use the composition, Gonthier teaches adding the composition to water. Col. 2, lines 32-35. However, we do not agree with Appellants that, prior to being added to water, the composition is necessarily a liquid. With regard to Appellants' comment that a system in the solid state prevents the equilibrium characteristic of a buffer system, we note that Gonthier describes adding the mixture to water, which would allow for this equilibrium.

Instead, we conclude that Gonthier is using the term "buffered mixture" to refer to a mixture of the acid and salt even before it is added to water. This reading of Gonthier is supported by the recitations in Gonthier of adding amounts of the mixture in grams to water. See, in particular, Example 1, which recites adding to water "2 g./l. of a mixture A having 95 parts (by volume) of the buffered propionic acid/sodium propionate

of pH 4.5 and 5 parts (by volume) of the buffered benzoic acid/sodium benzoate of pH 4.5.” Col. 3, lines 10-14 (emphasis added). See also column 2, lines 8-22.

Of the components of Gonthier’s composition, only propionic acid is necessarily a liquid at room temperature.⁵ Appellants’ specification indicates that when appropriate amounts, particularly up to 30% by weight, of a liquid carboxylic acid, such as propionic acid, is mixed with a solid carboxylic acid salt, such as a propionic acid salt, the liquid carboxylic acid will impregnate the salt to form a solid. Page 4, lines 11-22; page 3, lines 26-47. Therefore, we conclude that the examiner has set forth a prima facie case that, at least with regard to compositions containing a relatively low amount of propionic acid, the composition would comprise impregnated solid particles rather than being a liquid, specifically the buffered mixture of, for example, propionic acid and sodium propionate would be an impregnated salt. Thus, we conclude that the examiner has set forth a prima facie case that Gonthier teaches or suggests an impregnated salt.

Gonthier does not refer to impregnated salts having a particular particle size. However, as discussed above, Kotani describes particles having particle sizes that are easily within the claimed range of 10 μm to 2000 μm .

As with Gonthier, Kotani describes particles containing a carboxylic acid and a carboxylic acid salt. Although the particles of Kotani are different from the particles of Gonthier, given the similarities between these two compositions and the broad particle size range being claimed, which easily encompasses the particle sizes described in Kotani, we conclude that Kotani provides evidence that particles having a particle size

⁵ At room temperature, propionic acid is a liquid, whereas benzoic acid is a solid. In addition, sodium propionate and sodium benzoate are both solids at room temperature. See the attached descriptions of propionic acid, benzoic acid, sodium propionate, and sodium benzoate from Hawley’s Condensed Chemical Dictionary, 14th ed., John Wiley & Sons, Inc., 2002.

within the range of from 10 μm to 2000 μm would have been obvious based on the teachings of Gonthier. Given the fact that Kotani is being used as evidence of what would have been obvious based on the teachings of Gonthier, and is not being used to modify specific teachings of Gonthier, we are not persuaded by Appellants' arguments that there would have been no motivation to combine Gonthier with Kotani. In addition, based on our conclusion that the examiner has set forth a prima facie case that Gonthier teaches or suggests an impregnated salt, we do not agree that combining Gonthier with the particle sizes of Kotani would constitute "turn[ing] away from the buffered systems" of Gonthier or "change the principle of operation of the mixture taught by *Gonthier*."

For these reasons, we conclude that the examiner has set forth a prima facie case that claim 1 would have been obvious over the combination of Gonthier with Kotani. Appellants have not rebutted the examiner's prima facie case of obviousness. We therefore affirm the rejection of claim 1 under 35 U.S.C. § 103 over Gonthier in view of Kotani. Claims 2, 5-19, and 21 fall with claim 1. Claim 4, which was not separately argued with regard to this rejection, also falls with claim 1.

Claim 22 encompasses impregnated salts comprising sodium propionate impregnated with propionic acid. As discussed above, Gonthier describes "mixtures of a buffered mixture of propionic acid/metal propionate and of a buffered mixture of benzoic acid/metal benzoate," such as propionic acid-sodium propionate and benzoic acid-sodium benzoate. Col. 1, lines 52-59. As also discussed above, we conclude that the examiner has set forth a prima facie case that, at least with regard to compositions containing a relatively low amount of propionic acid, the buffered mixture of, for

example, propionic acid and sodium propionate would be an impregnated salt. Thus, we conclude that the combination of Gonthier and Kotani renders claim 22 obvious for the same reasons this combination renders claim 1 obvious.

Claims 23-25 depend from claim 22. Appellants argue that claims 23-25 should not be rejected over Gonthier in view of Kotani for the same reasons that claim 22 is not obvious over Gonthier in view of Kotani. Appeal Brief, page 5. However, for the reasons explained above, we conclude that claim 22 would have been obvious in view of Gonthier and Kotani. Claims 23-25 fall with claim 22.

We affirm the rejection of claims 22-25 under 35 U.S.C. §103 over Gonthier in view of Kotani. However, because our reasoning differs from that of the examiner, we designate our affirmance as a new ground of rejection, with respect to claims 22-25, in order to give Appellants a fair opportunity to respond.

Summary

We reverse the rejection of claims 4 and 23-25 under 35 U.S.C. § 103 over van Ooijen in view of Kotani. We affirm the rejection of claims 1, 2, 5-19, and 21 under 35 U.S.C. § 103 over van Ooijen in view of Kotani and the rejection of claims 1, 2, 4-19, and 21-25 under 35 U.S.C. § 103 over Gonthier in view of Kotani. Because our reasoning with regard to claims 22-25 differs from that of the examiner, we designate our affirmance of the rejection of these claims as a new ground of rejection under 37 CFR § 41.50(b) in order to give Appellants a fair opportunity to respond.

Time Period for Response

Regarding the affirmed rejections, 37 CFR § 41.52(a)(1) provides "Appellant[s] may file a single request for rehearing within two months from the date of the original decision of the Board."

In addition to affirming the examiner's rejections of one or more claims, this decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(b) also provides that Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:


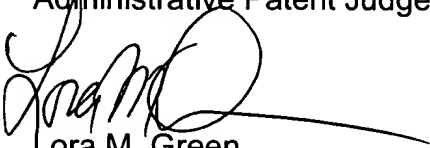
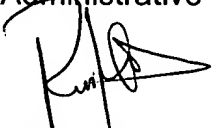
(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should Appellants elect to prosecute further before the examiner pursuant to 37 CFR § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejections, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejections are overcome.

If Appellants elect prosecution before the examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejections, including any timely request for rehearing thereof.

AFFIRMED-IN-PART, 37 CFR 41.50(b)

)	
Eric Grimes)	
Administrative Patent Judge)	
)	
Lora M. Green)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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